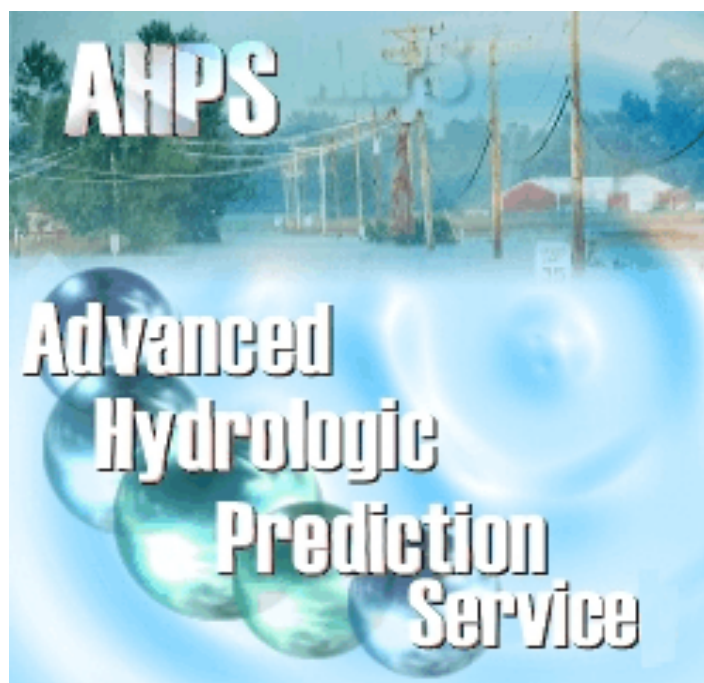




Advanced Hydrologic Prediction Service Quarterly Report 1st Quarter FY 2004



December 31, 2003

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AHPS Program Support

COMET Training - HSD2

Team Lead Jeff Zimmerman, OCWWS/HSD

Objective Develop Hydrologic Science Training for WFOs and RFCs

Milestones

Task	Due Date	Status
Hire COMET Staff for Hydro Team	10/01/03	Complete
Deliver Flash Flood Workshop	09/04	On Track
Deliver Basin Customization Workshop	09/04	On Track

Accomplishments/Actions - 1st Quarter FY04

- Hired Hydro Subject Matter Expert at COMET (Matt Kelsch)
- Outlined objectives and requirements for Flash Flood Workshop

Problems Encountered/Issues - 1st Quarter FY04

None

Program Planning, Monitoring and Contract Management - OHD1

Team Lead John Ingram, OHD, AHPS Program Manager

Objective Provide National program management; coordinate and track AHPS budgets and project plans; and manage AHPS contracts

Milestones

Task	Due Date	Status
Budget formulation and program planning		
Provide support to NWS and NOAA budget and legislative offices		on going
Provide FY05 PB budget and activity plans to NOAA	January 2004	on schedule
Propose two new performance metrics to NOAA	January 2004	on schedule
Provide program theme plans to ARC	April 2004	on schedule
Formulate budget to support AHPS FY05 initiatives	June 2004	on schedule
Provide FY05 project proposals to ARC	July 2004	on schedule
Propose allocation of FY05 funds to ARC	August 2004	on schedule
Coordinate and monitor AHPS activities		
AHPS Quad Charts	Monthly	on schedule
AHPS quarterly status reports	Quarterly	on schedule
Contract Management		
Coordinate Statements of Objectives for task activities		on going
Track task activities against proposed plans	Monthly	on going

Accomplishments/Actions - 1st Quarter FY04

Budget Formulation and Program Planning

- Provided documentation to NWS Budget Office in response to Congressional questions
- Initiated Flood Index Assessment for NWS response to the Etheridge Bill
- Worked with ER and legislative affairs on impacts due to Conference Report, HR 108-401 which allocates “funding for the Susquehanna River basin project and Delaware Basin efforts within funding for the Advanced Hydrological Prediction Services”
- Revised AHPS FY04 allocation due to HR 108-401 for presentation to the ARC
- Finalized report, “Potential Forecast Accuracy Performance Measures for the Advanced Hydrologic Prediction Service”
- Met with OCWWS/HSD and OHD personnel to initiate the development of AHPS Theme plans for Flash Flood Services, Short to Long-Term Forecasts and Flood Forecast Mapping

- Continued work to define the Hydrologic Operations Service Improvement Process for OHD. The process is in line with the NOAA requirements-based development process

Coordinate and Monitor

- Developed financial spread sheet to track obligations against quarterly plan for presentation to NWS Chief Financial Officer
- Worked with Regional offices and Project Leads to track project activities and develop monthly Quad Charts and quarterly reports
- Initiated monthly ARC conference calls

Contact Management

- Prepared Business Process document for the AHPS SETA Contract
- Developed Statement of Objectives (SOO) for new AHPS contract activities
- Coordinated AHPS contract task proposal evaluations

Problems Encountered/Issues - 1st Quarter FY04

None

National Web Management - OHD6

Team Lead Donna Page, OHD/RDM
Jon Roe, OHD/HSEB

Objective Provide a standard look and feel for the presentation of AHPS river observation and forecast information on the World Wide Web by all NWS weather offices.

Milestones

Task	Due Date	Status
Create and maintain a single national United States map “jumping off point” for navigation to any forecast location	Oct. 31, 2003	Complete
Design and implement new AHPS Web presence software	Sept. 30, 2004	In progress

Accomplishments/Actions - 1st Quarter FY04

By Oct. 31, 2003 all regions had implemented the CR developed standard AHPS web pages at all identified forecast locations and many data sites. This was accomplished by the efforts of the OHD contractor in collaboration with the region headquarters and field office personnel. In response to requirements set by the AHPS Web Page IWT, the OHD contractor made numerous updates to the software that generates the web pages and worked with regional web administrators and field offices to get the web pages up and to monitor and troubleshoot problems. The Rivers tab on the NWS home page was updated to show the new national river status map.

The AHPS Web Page IWT will be meeting in early Feb. to begin the planning process for the Phase II upgrade of the AHPS web pages based on APIT recommendations.

Problems Encountered/Issues - 1st Quarter FY04

None

AHPS Hydrologic Science Review - OHD14

Team Lead Pedro Restrepo, OHD/HL

Objective Obtain an in-depth review and recommendations from an independent Science Advisory Board on the merit of AHPS science activities and strategies

Milestones

Task	Due Date	Status
Form Committee and hold initial meetings with OHD representatives	Jul 2003	completed
Initiate Committee internal reviews and prepare draft report	Sep 2003	on-going
Deliver report and provide briefings on findings and recommendations	Dec 2004	

Accomplishments/Actions - 1st Quarter FY04

- The NRC has appointed members of the Science Advisory Board chaired by Soorosh Sorooshian, University of California
- The Panel is composed of members from federal agencies, academia and private companies
- The next formal meeting between the Panel and OHD is scheduled for February 11, 2004

Problems Encountered/Issues - 1st Quarter FY04

None

Collaborative Research - OHD22

Team Lead Pedro Restrepo, OHD/HL

Objective Develop/continue partnerships with Universities to collaborate on research for AHPS science activities

Milestones

Task	Due Date	Status
Solicit proposals	June 2003	Complete
Evaluate and rank proposals	March 2004	
Make final awards	July 2004	

Accomplishments/Actions - 1st Quarter FY04

- Twenty six (26) proposals have been received from academia and research organizations
- A Panel has been established to evaluate proposals

Problems Encountered/Issues - 1st Quarter FY04

None

AHPS Implementation

AHPS Implementation APRFC - AR6

Team Lead Larry Rundquist, APRFC

Objective To calibrate NWSRFS basins and validate quality of resulting probabilistic forecasts generated at those locations to allow implementation of advanced hydrologic prediction services (AHPS) at six forecast points; to enhance the capabilities of the APRFC to calibrate additional basins in data sparse areas.

Milestones

Task	Due Date	Status
Implement AHPS forecasts for Kenai River at Soldotna	Oct 2003	Completed
Prepare data sets for evaluation by Dr. Anderson	Dec 2003	Completed
Validate AHPS forecasts for Tanana River at Nenana, Salcha River near Salcha, Chena River near Chena Lakes, and Sixmile River near Hope.	May 2004	In progress
Calibration seminar by Dr. Anderson	June 2004	
Implement AHPS forecasts for Tanana River at Nenana, Salcha River near Salcha, Chena River near Chena Lakes, and Sixmile River near Hope	June 2004	
Complete 4-7 additional basin calibrations	July 2004	
Validate and implement one additional AHPS forecast point	Sept 2004	

Accomplishments/Actions - 1st Quarter FY04

Kenai River at Soldotna brought total AR AHPS points to 2. Data sets were delivered to Dr. Eric Anderson. Data collected for next four AHPS point being evaluated. Calibrations begun on additional forecast points.

Problems Encountered/Issues - 1st Quarter FY03

None

AHPS Implementation for NCRFC - CR8

Team Lead Dan Luna, HIC/NCRFC

Objective Implement probabilistic hydrologic forecasts for basins in the North Central River Forecast Center's (NCRFC) area of responsibility. The NCRFC goal is to have 49AHPS points implemented for long-term forecasts by the end of FY 2004.

Milestones

Implementation Area	Forecast Points Planned	Due Date	Actual to Date (1 st Qtr FY04)	Variance
southern Michigan	43	2 nd Qtr FY04	0	0
Minnesota and Wisconsin	6	3 rd Qtr FY04	0	0
Total	49	FY04	0	0

Accomplishments/Actions - 1st Quarter FY04

- Calibration of the initial 43 of the 49 AHPS forecast points in FY04 is on schedule

Problems Encountered/Issues - 1st Quarter FY04

None

AHPS Implementation for MBRFC - CR12

Team Lead Larry Black, HIC/MBRFC

Objective Implement probabilistic hydrologic forecasts for basins in the Missouri Basin River Forecast Center's (MBRFC) area of responsibility. The MBRFC goal is to have 23 additional AHPS points implemented for long-term forecasts by the end of FY 2004.

Milestones

Implementation Area	Forecast Points Planned	Due Date	Actual to Date (1 st Qtr FY04)	Variance
Upper Missouri River Tributaries	22	4 th Qtr FY04	0	0
Dakota Tributaries	1	4 th Qtr FY04	0	0
Total	23	FY04	0	0

Accomplishments/Actions - 1st Quarter FY04

- Data preparation, analyses, and calibration efforts remain on schedule

Problems Encountered/Issues - 1st Quarter FY04

None

AHPS Implementation for OHRFC - ER1

Team Lead Craig Hunter (HIC/OHRFC), Tom Adams (DOH)

Objective Implement probabilistic hydrologic forecasts for basins in the Ohio River Forecast Center's (OHRFC) area of responsibility. The OHRFC goal is to have basic AHPS implementation for all existing long-term forecast points in the OHRFC area of responsibility by the end of FY 2006.

Milestones

Implementation Area	Forecast Points Planned	Due Date	Actual to Date (1st Qtr FY04)	Variance
New Fcst Points (Miami, Muskingum, Miami)	6 2	1st Qtr 2nd Qtr	6 (1st Qtr)	0
White R.	15	3rd Qtr	0	0
East Fork White R.	8	4th Qtr	0	0
Green R.	4	4th Qtr	0	0
Ohio River (OHL - through Louisville, KY)	6	4th Qtr	0	0
Total	41	FY04	6	0

Accomplishments/Actions - 1st Quarter FY04

6 forecast points added this in the Muskingum and Miami sub-basins of the Ohio River Basin.

The OHRFC has set up the East Fork White River, White River, and another segment of the mainstem Ohio River (OHL - through Louisville, KY) in test mode.

The CR-designed "consistent look and feel" AHPS web page is now operational nationwide. Of special note, this national implementation could not have been possible without the efforts of Mark Fenbers and HIC Craig Hunter - as they provided significant resources in the generation of the nationally consistent map backgrounds.

As a result of widespread flooding and conversion from AWIPS to LINUX platforms, OHRFC AHPS development time was limited.

Problems Encountered/Issues - 1st Quarter FY04

None

AHPS Implementation for NERFC - ER2

Team Lead Gregg Rishel (HIC/NERFC), Robert Shedd (DOH)

Objective Implement probabilistic hydrologic forecasts for basins in the Northeast River Forecast Center's (NERFC) area of responsibility. The NERFC goal is to have AHPS implementation for long-term forecasts for the entire NERFC area of responsibility by the end of FY 2009.

Milestones

Implementation Area	Forecast Points Planned	Due Date FY04	Actual to Date (1 st Qtr FY04)	Variance
St. Lawrence R. Basin	17	1 st Qtr.	17 (1 st Qtr)	0
Complete Merrimack R. Basin	7	2 nd Qtr.	0	0
Total	24	FY04	17	0

Accomplishments/Actions - 1st Quarter FY04

17 new AHPS locations were implemented in the St. Lawrence River Basin.

The NERFC met with representatives of the National Ocean Service (NOS) in October. The purpose of the meeting was to discuss collaboration on the NOS estuary model for the Port of New Jersey/New York. Specifically, the NOS is interested in obtaining information from the NERFC on freshwater inflow to this estuary from the Hudson River basin. The NERFC agreed to provide the NOS with observed and forecast hydrology information on a daily basis for the Hudson River at Troy, NY and several tributary streams of the Hudson below Albany, NY. NERFC is working with NOS to finalize the process for transferring the data using scripts provided by MARFC.

The NERFC also agreed to investigate the possibility of providing observational flow data on a more frequent basis than once per day. NERFC plans for implementation of Advanced Hydrologic Prediction Service (AHPS) in the Hudson River basin were also discussed. The NOS is interested in receiving observation and forecast information from the additional locations planned in this activity, including Albany and Poughkeepsie, NY and several tributaries of the Hudson River.

The NOS will utilize the information supplied by the NERFC for the Hudson River basin along with information for some New Jersey Rivers supplied by the Middle Atlantic River Forecast Center to model water levels and currents for the Port of NJ/NY. This model information is

crucial to those responsible for the flow of marine traffic in one of the busiest ports in the world.

RTI has completed and delivered the calibrations for the upper Hudson River basin.

In addition, NERFC will be performing additional calibration work in western New York in-house.

New hydrologic forecast services were implemented for a number of locations in the New York Finger Lakes region during FY03. This effort was a part of NERFC's overall AHPS plans. The service has been well received by partners and customers.

Problems Encountered/Issues - 1st Quarter FY04

None

AHPS Implementation for MARFC - ER3

Team Lead Peter Ahnert (HIC/MARFC), Joe Ostrowski (DOH)

Objective Implement probabilistic hydrologic forecasts for basins in the Middle Atlantic River Forecast Center's (MARFC) area of responsibility. The MARFC goal is to have basic AHPS implementation for long-term forecasts for the entire MARFC area of responsibility by the end of FY 2005.

Milestones

Implementation Area	Forecast Points Planned	Due Date	Actual to Date (1st Qtr FY04)	Variance
Lehigh sub-basin	5	1 st Qtr	5 (1 st Qtr)	0
Delaware River Basin	15	2 nd Qtr	0	0
Schuylkill sub-basin	8	2 nd Qtr	0	0
New Jersey Streams	18	4 th Qtr	0	0
Potomac River Basin	20	4 th Qtr	0	0
Shenandoah River basin	6	4 th Qtr	0	0
Total	72	FY04	5	0

Accomplishments/Actions - 1st Quarter FY04

Five additional points in the Lehigh River Basin are now available on the AHPS web pages as basic AHPS points, which includes probabilistic information.

Calibration was completed for 3 additional locations in the James River and Rappahannock River basins.

MARFC helped redesign file and directory structures for the FLDVIEW/FLDIMS Flood Inundation Mapping system to provide mapping services for additional locations in the MARFC area.

MARFC and WFOs State College and Binghamton attended an SRBC organized and sponsored Susquehanna River Basin Workshop on November 13th in Wilkes-Barre, PA. Office representatives made presentations on the NWS hydro program, Watches/Warning products and AHPS graphical products.

MARFC installed the latest version of software which generates the probabilistic MATs/MAPS needed for the short-term 7-day probability forecasts.

Tested and implemented OHD's latest version of ESPADP which has improved time delineations on the x-axis of the various plots.

Assembled E-19 type data for 11 new AHPS forecast points as requested by NWSH.

Continued working with OHD, in revising FLDWAV model for flood inundation mapping.

Problems Encountered/Issues - 1st Quarter FY04

None

AHPS Implementation for LMRFC - SR1

Team Lead Dave Reed, HIC

Objective Implement probabilistic hydrologic forecasts for basins in the Lower Mississippi River Forecast Center's (LMRFC) area of responsibility. The LMRFC goal is to have AHP basic service implemented for the entire LMRFC area of responsibility by the end of FY2010 (assumes full AHPS funding).

Milestones

Implementation Area	Forecast Points Planned	Due Date	Actual to Date (1st Qtr FY04)	Variance
<u>UPPER TENNESSEE BASIN</u> Planned 3rd Q Total =10 sites				
Powell Basin	2	4/30/2004	0	0
Clinch Basin	3	5/31/2004	0	0
Holston Basin	2	6/30/2004	0	0
Nolichucky Basin	1	6/30/2004	0	0
Little Pigeon Basin	1	6/30/2004	0	0
South Chickamauga Basin	1	6/30/2004	0	0
Planned 4th Q Total =15 sites				
Emory Basin	1	7/31/2004	0	0
Sequatchie Basin	1	7/31/2004	0	0
Paint Rock Basin	1	7/31/2004	0	0
Flint Basin	1	7/31/2004	0	0
Shoal Creek Basin	1	8/31/2004	0	0
Upper French Broad Basin	5	8/31/2004	0	0
Lower French Broad Basin	2	9/30/2004	0	0
Pigeon Basin	1	9/30/2004	0	0
Tusckaseegee Basin	2	9/30/2004	0	0
Total	25	FY04	0	0

Accomplishments/Actions - 1st Quarter FY04

LMRFC is currently in the market research phase with RTI.

LMRFC is working on the FY04 Statement of Objective (SOO) for contract calibration support. The SOO covers calibration of selected tributaries of the upper Tennessee River and supports the WFO HSAs of MRX, GSP, RNK, and HUN.

The FY04 18% across the board reduction from 31 to 25 AHPS sites was reflected in the update submitted to Southern Region on December 18.

On December 19, LMRFC submitted to Southern Region a proposed list of 27 FY05 AHPS sites covering the West Tennessee drainages and the Yazoo Basin.

The SOO is expected to be completed by January 30, 2004.

Problems Encountered/Issues - 1st Quarter FY04

None

AHPS Implementation for WGRFC - SR2

Team Lead Jerry Nunn, HIC

Objective Implement probabilistic hydrologic forecasts for basins in the West Gulf River Forecast Center's (WGRFC) area of responsibility. The objective is to implement AHP basic services in the Trinity River Basin. Our goal is to complete AHP basic services implementation by the end of FY2011 (assumes full AHPS funding).

Milestones

Implementation Area	Forecast Points Planned	Due Date	Actual to Date (1st Qtr FY04)	Variance
Reservoir Inflow Forecasts	14	4 th Qtr	0	0
RFC Head water Forecast Points	11	4 th Qtr	0	0
Mainstem Forecast Points	8	4 th Qtr	0	0
Total	33	FY04	0	0

Accomplishments/Actions - 1st Quarter FY04

WGRFC began market research activities with RTi. They received and analyzed preliminary cost figures for contract model calibration support. Market research discussions are scheduled for the second week of January.

Problems Encountered/Issues - 1st Quarter FY04

None

AHPS Implementation for SERFC - SR3

Team Lead John Feldt, HIC

Objective Implement probabilistic hydrologic forecasts for basins in the Southeast River Forecast Center's (SERFC) area of responsibility. Our goal is to complete AHP basic services implementation by the end of FY2008 (assumes full AHPS funding).

Milestones

Implementation Area	Forecast Points Planned	Due Date	Actual to Date (1st Qtr FY04)	Variance
Cape Fear	5 3	1 st Qtr 2 nd Qtr	5 (1 st Qtr)	0
Neuse	1	2 nd Qtr	0	0
Roanoke	5 7	2 nd Qtr 3 rd Qtr	0	0
Chowan	3 3	3 rd Qtr 4 th Qtr	0	0
Peedee	4	4 th Qtr	0	0
Lumber	1	4 th Qtr	0	0
Santee	1	4 th Qtr	0	0
Flint	1	4 th Qtr	0	0
Total	34	FY04	5	0

Accomplishments/Actions - 1st Quarter FY04

We are reviewing the NWSRFS RES-J enhancements that RTi has provided from FY03 AHPS contract work. This was for Reservoir Inflow Calculations, Weekly Variation in SetRelease, and Adjust Modifications for Use with Spillway. A conference call was held between SERFC, OHD, and RTi to discuss these items. SERFC will be beta testing these enhancements over the next few months.

We are reviewing the calibrations provided by RTi in October 2003 (59 calibrations of river segments and reservoirs). These will be incorporated into the operational NWSRFS during the upcoming quarter.

SERFC has begun drafting the Statement of Objective for FY04 contract support.

Flood inundation maps are now being prepared daily for three locations on the Tar River in North Carolina (Rocky Mount, Tarboro, and Greenville), and are posted to our web site. A Product Description Document was developed and forwarded to NWSH for posting to the NWS Experimental Product web page.

Problems Encountered/Issues - 1st Quarter FY04

None

AHPS Implementation for ABRFC - SR4

Team Lead Billy Olsen, HIC

Objective Implement probabilistic hydrologic forecasts for basins in the Arkansas and Red Basin River Forecast Center's (ABRFC) area of responsibility.

Milestones

Implementation Area	Forecast Points Planned	Due Date	Actual to Date (1st Qtr FY04)	Variance
Arkansas	5 43	1 st Qtr 4 th Qtr	5 (1 st Qtr)	0
Cimarron	3	4 th Qtr	0	0
Total	51	FY04	5	0

Accomplishments/Actions - 1st Quarter FY04

These five river forecast point locations are now available on the AHPS web pages as basic AHPS points, which include probabilistic information.

ABRFC participated in a SR conference call with OHD, RTi and the SR RFCs that described the new AHPS contract process.

ABRFC contacted RTi for the purpose of describing ABRFC FY-04 AHPS work and conducting a market analysis.

ABRFC submitted a Statement of Work (SOW) to RTi.

ABRFC and RTi discussed the SOW and agreed that RTi would make appropriate changes.

RTi provided ABRFC with a proposal for FY04 work.

ABRFC approved the RTi proposal and submitted the proposal to OHD and Anthony Varone for further action.

Problems Encountered/Issues - 1st Quarter FY04

None

AHPS Implementation for CBRFC - WR5

Team Lead David Brandon, HIC/CBRFC

Objective Implement probabilistic hydrologic forecasts for 28 basins in the Colorado Basin River Forecast Center's (CBRFC) area of responsibility.

Milestones

Implementation Area	Forecast Points Planned	Due Date	Actual to Date (1 st Qtr FY03)	Variance
Above Utah Lake	3	9/30/04	0	0
Above Great Salt Lake	14	9/30/04	0	0
Above Sevier Lake	5	9/30/04	0	0
Above Blue Mesa	2	9/30/04	0	0
Above Colorado at Glenwood Springs	3	9/30/04	0	0
Above Gunnison at Grand Junction	1	9/30/04	0	0
Total	28	FY04	0	0

Accomplishments/Actions - 1st Quarter FY04

All sites have been calibrated. All sites are set up for ESP.

Problems Encountered/Issues - 1st Quarter FY04

None

AHPS Implementation CNRFC - WR6

Team Lead Robert Hartman, HIC/CNRFC

Objective Implement probabilistic hydrologic forecasts for 17 basins in the California-Nevada River Forecast Center's (CNRFC) area of responsibility.

Milestones

Implementation Area	Forecast Points Planned	Due Date	Actual to Date (1 st Qtr FY03)	Variance
Smith River basin	2	9/30/04	0	0
Klamath River basin	5	9/30/04	0	0
Eel River basin	5	9/30/04	0	0
Napa River	2	9/30/04	0	0
other headwaters	3	9/30/04	0	0
Total	17	FY04	0	0

Accomplishments/Actions - 1st Quarter FY04

Continuing operational ESP implementation

Problems Encountered/Issues - 1st Quarter FY04

None

AHPS Implementation for NWRFC - WR7

Team Lead Harold Opitz, HIC/NWRFC

Objective Implement probabilistic hydrologic forecasts for 16 basins in the Northwest River Forecast Center's (NWRFC) area of responsibility.

Milestones

Implementation Area	Forecast Points Planned	Due Date	Actual to Date (1 st Qtr FY03)	Variance
Columbia River Basin	8	9/30/04	0	0
SNAKE River Basin	6	9/30/04	0	0
Northwest Washington	1	9/30/04	0	0
Coastal Oregon	1	9/30/04	0	0
Total	16	FY04	0	0

Accomplishments/Actions - 1st Quarter FY04

Continuing operational ESP implementation.

Problems Encountered/Issues - 1st Quarter FY04

None

AHPS Regional Implementation and Outreach

Snow Water Equivalent Data - AR1

Team Lead Larry Rundquist, APRFC

Objective Acquire high quality, high resolution airborne gamma radiation snow water equivalent for flight lines in Alaska; this should improve accuracy and lead time of hydrologic forecasts by providing high quality input to forecast operations in data sparse areas

Milestones

Task	Due Date	Status
Fly selected operational flight lines	April 2004	n/a
Incorporate data into operations	June 2004	n/a

Accomplishments/Actions - 1st Quarter FY04

APRFC is monitoring snow conditions throughout the state using sparse available observations. These observations will help identify which tracks will be flown at the beginning of the third quarter.

Problems Encountered/Issues - 1st Quarter FY04

Budget information is unavailable, but early indications are that funding may be reduced by 20%, reducing the number of flight lines that can be flown.

OCWWS/HSD Outreach - HSD1

Team Lead Tom Graziano, OCWWS/HSD
Larry Wenzel, OCWWS/HSD

Objective Accomplish outreach for NWS offices where the AHPS will or are being implemented. Develop clear and consistent AHPS outreach materials for use by National, regional and local office personnel

Milestones

Task	Due Date	Status
Conduct user forums/workshops to assess needs, validate requirements, and educate customers to maximize the value of NWS products and services	Sept 2004	
Produce/update components of the AHPS toolkit including writing/editing AHPS newsletter; write/edit other articles for publication	Sept 2004	
Create/deliver materials (e.g. brochures, user guides, etc.) For use during public forums/workshops	Sept 2004	

Accomplishments/Actions - 1st Quarter FY04

Met with the National Safety Council to discuss joint AHPS projects

- established plans to reprint additional NOAA/AHPS brochures
- established plans to design and print Turn Around Don't Drown (TADD) brochure
- NSC agreed to arrange a meeting between OCWWS/HSD and the National Highway Traffic Safety Administration to discuss collaboration for the TADD campaign

Problems Encountered/Issues - 1st Quarter FY04

None

National Forecast Location Database - HSD3

Team Lead Frank Richards, OCWWS/HSD

Objective Implement a single national database that aggregates information on hydrologic observation and service locations used by WFOs and RFCs. Provide information in a GIS format that is Web accessible for easy access by all users.

Milestones

Task	Due Date	Status
I. Develop National Forecast Location Database		
Prototype		
Collect information from field offices for prototype	Mar 2003	Completed
Integrate information into prototype national database	Mar 2003	Completed
IHFS		
Procure database software/system upgrades	Apr 2003	Completed
Specify requirements to post IHFS data to national database	Apr 2003	Completed
Develop software to post data to national database	Dec 2003	Alpha version completed - ready for field testing
AHPS		
Determine attributes needed but not available in IHFS database	June 2003	In Process
Specify requirements to manage national location database	July 2003	In Process
Develop database schema to accommodate AHPS attributes	Nov 2003	Completed
Develop software to manage national location database	June 2004	
II. Develop Interactive GIS Web Access for National Database		
Demonstrate concept using prototype database	Jan 2003	Completed
Identify and document user requirements	Aug 2003	In Process
Implement interactive Web access	Aug 2004	

Accomplishments/Actions - 1st Quarter FY04

- An alpha version of the data transfer software was developed and will be tested in the 2nd quarter
- Initiated coordination with a team in Southern Region working on a similar activity, with the intention of eliminating duplication
- The national data base will use the same schema as the current operational data with the exception that each record will include the data the record was updated and the source of the update

Problems Encountered/Issues - 1st Quarter FY04

- Deployment of the software at field offices will require standard AWIPS change management approval and will need to be integrated into a formal AWIPS build: this will delay completion – we are exploring using the prototype data base to develop the Web interface

RFC/HPC Visiting Forecaster - NCEP3

Team Lead Peter Manousos, HPC Development and Training Branch

Objective To improve understanding and cooperation between HPC forecasters and RFC hydrologists

Milestones

Task	Due Date	Status
1.Develop agenda for RFC visitors to HPC and HPC visitors to RFCs.	November 2003	Completed
2. Schedule and implement visits.	September 2004	Awaiting Final Budget

Accomplishments/Actions - 1st Quarter FY04

An agenda similar to the one used last year will be followed. It will be modified on a case by case basis to meet the needs and interest of each visitor.

Problems Encountered/Issues - 1st Quarter FY04

Lack of a final budget has delayed scheduling of trips.

River Ensemble Processor (REP) - OST2

Team Lead Walter Scott, OST31
Tech Lead George Smith, OHD/HL

Objective Increase RFC computational performance to meet ensemble processing needs at the RFCs.

Milestones

Task	Due Date	Status
Perform alternative design analysis, perform RFC benchmark tests, analyze benchmark results, conduct design reviews, and develop and submit proposal from NGIT to NWS	November 12, 2003	Complete
Finalize vendor procurements for OAT activities and issue competitive purchase requests for hardware	February 29, 2004	On Schedule
Prepare Field Modification Kit (FMK) and integrate in AWIPS baseline at NGIT	January 30, 2004	On Schedule
Proof FMK on NWS HQ NMT-R system	February 13, 2004	On Schedule
Ship FMKs and provide installation support, technical advice, and assistance	March 17, 2004	On Schedule
Support four-week Operational Acceptance Test at NCRFC and OHRFC	March 17, 2004	On Schedule
Complete installation of all 18 systems (13 RFCs, 3 HQ, 1 NGIT, and 1 spare)	April 30, 2004	On Schedule

Accomplishments/Actions - 1st Quarter FY04

See the updated schedule of major accomplishments above. By the end of FY2004 Quarter 1 OHD had successfully worked with OS&T/SEC, NGIT, and NCRFC to complete the design, the benchmarking, the proposal, and the decisions for the procurement which will follow in February. System installations will proceed in February and March.

Problems Encountered/Issues - 1st Quarter FY04

None.

AHPS Flash Flood Services

Confidence Factor for QPF Forecasts - NCEP1

Team Lead Ed Danaher, HPC Development and Training Branch

Objective To develop procedures based on the use of short and medium range ensemble predictions, to quantify the measure of uncertainty in the manually produced HPC 6 and 24-hr forecasts

Milestones

Task	Due Date	Status
1. Review short-range and global ensemble QPF forecasts for the period Oct. 2001 to Sept 2003. Compare this to HPC gridded QPF. Determine areas where ensembles provide low, moderate and high confidence in the QPF issued. Categorize by regions and time from model initialization. Calibrate these confidence factors using this data set.	March 2004	On schedule
2. Run a one-year test and evaluation of this methodology with several RFCs from diverse geographic and hydrologic areas of the country. This includes verification of the forecasts.	March 2005	On schedule
3. Validate that this process has allowed hydrologist to increase numbers of 6-hr QPFS used in flow forecast and has in fact increased the lead time and POD of flood forecasts.	June 2005	On schedule
4. Implement nationally if supported by results from Task 3.	July 2005	On schedule

Accomplishments/Actions - 1st Quarter FY04

During the first quarter we completed a first attempt at correlating HPC QPF error with the Short Range Ensemble Forecast (SREF) QPF spread in order to generate a confidence factor. We are using the regression equations derived to compute an expected Absolute Error (AE) for each grid point for each 6 hour QPF forecast from 6 to 60 hours. The equations were derived from HPC QPFs and SREFs from 2001 through 2003. We have begun an ongoing verification program and are working to validate, and if possible, improve the equations. This experimental output is available at <http://www.hpc.ncep.noaa.gov/qpfci/qpfci.shtml> and is updated twice a day. For each time period the display includes the HPC QPF forecast, the expected AE, the 95% confidence interval of QPF, and the 95% confidence interval of the expected AE.

Problems Encountered/Issues - 1st Quarter FY04

None

Flash Flood Tools for FFMP in AWIPS - NSSL1

Team Lead Ken Howard, NSSL

Objective **A. Technical Support** - Provide technical support for WFO's in the development of base maps for the implementation of FFMP

B. Tiger Team Participation - Provide technical expertise on the Tiger Team for WSR-88D and QPE-SUMS applications

Milestones

Task	Due Date	Status
Original development of basin maps for FFMP	Sep. 03	delivered
Expanded Coverage for MPE	Dec. 03	need specifications
Technical Support	Sep. 05	in progress

Accomplishments/Actions - 1st Quarter FY04

Provided basin customization support and data access for numerous WFOs and other NOAA offices. Developed instructions to guide WFOs through basin customization tasks. Completed approximately 30 FFMP basin datasets with hydrologic connectivity attributes to assist in basin customization efforts.

Problems Encountered/Issues - 1st Quarter FY04

Need specifications for creation of additional FFMP basin datasets to be used with MPE application (MPE grid domains, basin aggregation requirements, additional attribute requirements, etc.).

Distributed/Flash Flood Modeling - OHD3

Team Lead Mike Smith, OHD/HSMB

Objective DMIP proved the scientific validity of the basic HL-RMS. The objective is now to continue research, development, and prototype applications of the HL-RMS model for river and flash flood simulation

Milestones

Task	Due Date	Status
Hydro model parameter estimation		on going
Calibration, Var. assimilation		on going
Incorporate snow, frozen grnd. capabilities		Snow-17 in HL-RMS, now being tested
SRBC Application	12/2004	on schedule
DMIP future phases	2005	on schedule
ABRFC support, E2E	2005	on schedule

Accomplishments/Actions - 1st Quarter FY04

HL submitted 3 papers to the DMIP Special Issue of Journal of Hydrology. Mike Smith served as Guest Editor of this Special Issue. All papers are now with the Journal of Hydrology staff. Snow-17 was incorporated into HL-RMS code and is being tested in the SRBC project. A new automatic calibration procedure has been developed with shows great promise for use with distributed models. Variational assimilation is being prototype tested for several basins in the WGRFC domain.

Problems Encountered/Issues - 1st Quarter FY04

To run a gridded snow model in HL-RMS, it is not clear which data set of temperatures is useful. This problem is compounded by the delayed hiring of a specialist to help with evaluating data sets for use with energy budget snow models.

Probabilistic/Ensemble QPE Algorithm - OHD7

Team Lead Richard Fulton, OHD/HSMB

Objective To explore and develop innovative, operational, prototype techniques to generate uncertainty information for radar-based multisensor rainfall estimates and effective ways to present that information to users. This activity is expected to be accomplished primarily by contractors but in coordination with HL.

Milestones

Task	Due Date	Status
Evaluate possible techniques	June 2003	Done
Develop prototype technique	June 2004	On track
Refine, test, and deliver prototype technique	June 2005	
Validate and implement technique within NWS operational systems	Sept. 2006	

Accomplishments/Actions - 1st Quarter FY04

- Collected internal and external reviews of Phase 2 report from U. Iowa contractors. The report contains suggestions and plans for integrating probabilistic information with the existing precipitation processing system, and experiments to demonstrate the value of probabilistic vs. deterministic QPE.
- Formulated Phase 3 statement of work based on Phase 2 report
- Coordinated with OS&T and MitreTek on obtaining a Linux version of ORPG for U. Iowa onsite use in prototyping the probabilistic algorithm.

Problems Encountered/Issues - 1st Quarter FY04

- Potential delays in delivery of the Linux ORPG could affect tasks after FY04 4th quarter

Multisensor Precipitation Nowcaster - OHD17

Team Lead Richard Fulton, OHD/HSMB

Objective Develop and implement within AWIPS the capability to produce short-term (0-1 hr) regional, multisensor, gridded precipitation forecasts (“nowcasts”) to provide WFOs with additional guidance and lead-time for flash flood warnings

Milestones

Task	Due Date	Status
Develop MPN prototype to use regional MPE-WFO input	Sept. 2004	On track
Integrate MPN prototype and MPE-WFO	March 2005	At risk
Implement MPN on NWS/WFO operational AWIPS system and link to FFMP and HL-RMS	Dec. 2005	
Develop technical and training materials	Dec. 2005	
Beta-test MPN/FFMP at WFO field sites and analyze results	Dec. 2006	

Accomplishments/Actions - 1st Quarter FY04

- Modified MPN code to enable forecasts based on input map grids of arbitrary size, such as radar mosaics (rather than single radar)
- Started integration of MPN with MPE - send radar mosaics to MPN for use as forecast input

Problems Encountered/Issues - 1st Quarter FY04

- 1-year detail of lead developer Rich Fulton early in 2nd quarter will slow further testing

Multisensor QPE for Flash Flooding - OHD18

Team Lead Richard Fulton, OHD/HSMB

Objective Enhance the operational multisensor quantitative precipitation estimation (QPE) algorithm so that it serves the flash flood monitoring and warning needs of the Weather Forecast Offices (WFOs)

Milestones

Task	Due Date	Status
Enhance MPE processing for shorter time and space scales	Sept. 2004	On track
Enhance MPE graphical user interface	March 2005	
Implement MPE on NWS/WFO operational AWIPS systems and link to FFMP and HL-RMS	Sept. 2005	
Develop technical and training materials	Sept. 2005	

Accomplishments/Actions - 1st Quarter FY04

- Significant progress on ingest of radar data from LWX, AKQ, FCX sites, and 15-minute IFLOWS gage data, into MPE testbed
- Began development of GUI for high-resolution mosaic products
- Coordinated with HSEB on getting their assistance for development (particularly GUI) in the future
- Began to investigate ways of integrating high-frequency (15-minute) gage data

Problems Encountered/Issues - 1st Quarter FY04

- Departure of Rich Fulton on 1-year detail early in 2nd quarter could slow development

Distributed Modeling Development - OHD23

Team Lead Jon Roe, OHD/HL/HSEB

Tech Lead Lee Cajina, OHD/HL/HSEB

Objective Initiate the development of a nationally delivered distributed hydrologic model.

Milestones

Task	Due Date	Status
1.) Complete updates to the HL-RMS prototype to create the hardened DMS 1.0 prototype to be ready for field evaluation and requirements gathering for DMS 2.0	September 2003	Complete
2.) Deliver DMS 1.0 hardened prototype to ABRFC.	September 2003	Complete
3.) Deliver DMS 1.0 hardened prototype to WGRFC.	October 2003	Complete
4.) Conduct initial investigation into new NWSRFS architecture to be able to build DMS 2.0 in a flexible way.	December 2003	Complete
5.) Complete RFC field evaluation and operational requirements gathering for DMS 2.0 from the DMS 1.0 prototype.	February 2004	In progress
6.) Arrive at Key Decision Point to make decision to move forward to building DMS 2.0.	February 2004	Coming up
7.) Architectural Design development, including database, computational, display, data assimilation, calibration and operational considerations.	December 2004	
8.) Application of architectural design to meet specific distributed model prototype requirements.	August 2005	
9.) Evaluation of system prototype elements developed above and updates to architecture scheme and implementation.	October 2005	
10.) Iteration over steps 7, 8, and 9 to continue to integrate new science and system elements into DMS 2.0 operations.	N/A, will define next round of 7, 8, & 9	

Accomplishments/Actions - 1st Quarter FY04

- Delivered the hardened HL-RMS prototype (now called DMS 1.0) to WGRFC for evaluation and operational requirements gathering.
- Traveled to WGRFC and delivered training on DMS 1.0 and this project.
- Corrected bugs and made several small enhancements to DMS 1.0 based on ABRFC and WGRFC user feedback prior to official test phase.

- Delivered DMS 1.0 test plan and procedures to ABRFC and WGRFC for official test phase.
- Completed initial investigation into new system architecture enhancements for NWSRFS needed for the follow-on phase of this project, the construction of DMS 2.0 (i.e., the fully field deployed distributed hydrologic model).

Problems Encountered/Issues - 1st Quarter FY04

None

Site Specific Development - OHD32

Team Lead Jon Roe, OHD/HL/HSEB

Tech Lead Chip Gobs, OHD/HL/HSEB

Objective To enhance the Site Specific function in the WHFS baseline to include improved runoff modeling; improved routing; and snow modeling.

Milestones

Task	Due Date	Status
Integrate the SAC-SMA model into existing Site Specific.	November 2003	Complete.
Initial AWIPS delivery of the OB4 version of the application.	December 2003	Complete.
Begin Field Testing of the application.	February 2004	About to begin.
Final AWIPS delivery of the OB4 version of the application.	April 2004	On target.
Evaluate science issues associated with integrating a VAR version of SAC-SMA into Site Specific.	July 2004	Not yet begun.
Implement a VAR version of SAC-SMA into Site Specific.	September 2004	Not yet begun.
Evaluate improved snow modeling techniques to be included in Site Specific.	December 2004	Not yet begun.
Implement improved snow modeling techniques into Site Specific.	March 2005	Not yet begun.
Evaluate improved routing techniques to be included in Site Specific.	July 2005	Not yet begun.
Implement improved routing techniques into Site Specific.	August 2005	Not yet begun.

Accomplishments/Actions - 1st Quarter FY04

1. Project Plan and schedule created.
2. Added Sacramento Model to the Site Specific application.
3. Added graphical precipitation editing to the application.
4. Improved the user interface.

Problems Encountered/Issues - 1st Quarter FY04

None

MPE Enhancements Development - OHD34

Team Lead Jon Roe, OHD/HL/HSEB

Tech Lead Mark Glaudemans, OHD/HL/HSEB

Objective To enhance the MPE operations to allow RFCs and WFOs to use the MPE application to provide improved quantitative precipitation estimates (QPEs) for use in hydrologic models, and to allow these QPEs to be used in other areas

Milestones

Task	Due Date	Status
1.) Optimize MPE field generation processing. Will facilitate more frequent runs, and for time spans shorter than one hour.	July 2004	Design work in progress
2.) Provide additional graphical editing tools to the MPE interface to support manual integration of multi-sensor data on an event/hour basis	September 2004	Not started yet
3.) Implement newly engineered solution to providing consistent up-to-date gage data reports by creating a point precipitation data server operation	July 2004	Design work in progress
4.) Provide additional documentation and training support on technical details and user interface operations of MPE processes, including bias computation operations	July 2004	User manual in progress, demo and training material to the NWSTC
5.) Provide automated method for providing resulting MPE grids to external application such as D2D and to external customers via web or other mechanisms	February 2005	Not started yet
6.) Provide improved method for integrating the interactive MPE operations with the analysis of river and other data sets and with the operations of the SiteSpecific model.	May 2005	Not started yet

Accomplishments/Actions - 1st Quarter FY04

- 1.) Design work has been performed, however, significant improvements have not been attained yet.
- 2.) No progress as yet.
- 3.) Design work has been performed and this task has been presented to the AWIPS Program as development work during AWIPS Release OB5.

4.) A new mpe_fieldgen manual is being prepared, not complete yet. Support in the form of an MPE demonstration and a lecture session have been provided to the NWS Training Center for the new training course on advanced WHFS topics.

5.) No progress as yet.

6.) No progress as yet.

Problems Encountered/Issues - 1st Quarter FY04

Progress is being made, however, at a slower pace than anticipated due to limited funding of this proposal in FY2004.

NEXRAD PPS Modernization - OHD35

Team Lead Jon Roe, OHD/HL/HSEB

Tech Lead Chris Dietz, OHD/HL/HSEB

Objective

1. To upgrade the PPS so that it can support multiple new VCPs, negative elevations, higher resolution data from the RDA, and migration to Linux.
2. To convert the PPS from FORTRAN to C, simultaneously generating accurate/complete documentation, and introducing local source code version control.

Milestones

Task	Due Date	Status
1.) Analyze the PPS tasks to determine the impact of proposed NEXRAD enhancements:		
a.) new/faster VCPs	12/04	COMPLETED late FY03
b.) port to Linux	12/04	Waiting for O/S specifications from OS&T
c.) negative elevations	12/04	COMPLETE
d.) ORDA higher resolution data	12/04	Delayed start due to reduced funding
2.) Convert the FORTRAN-based PPS tasks to POSIX-compliant C; place source code under local version control	6/05	Delayed start due to reduced funding
3.) Generate a complete set of baseline documentation consistent with NEXRAD standards:		
a.) design documents (DFDs, structure charts)	9/05	Delayed start due to reduced funding
b.) RPG-AWIPS product specifications	9/05	ONGOING

Accomplishments/Actions - 1st Quarter FY04

- Analysis for new/faster VCPs: enhanced source code delivered to OOS/ROC for RPG Build 5.
- Analysis for negative elevations: report delivered to OS&T.
- Task to document RPG-AWIPS products commenced.

Problems Encountered/Issues - 1st Quarter FY04

Reduced funding (from \$100K to \$22K) slowed progress on some tasks. Plan to add contract resources starting 2nd Quarter FY04.

Flash Flood Monitoring and Prediction (FFMP) - OST1

Team Lead Stephan Smith, OST23

Objective Fulfill NWS Requirements for the AWIPS Flash Flood Monitoring and Prediction (FFMP) Tool

Milestones

Task	Due Date	Status
Generalized "QPE/QPF" as a precipitation source to allow any gridded QPE/F (e.g. from NWP models) to be used as an input into FFMP. Add RFC QPF, Kitzmiller's 3-hr QPF, and Satellite Auto-Estimate QPE	OB4	complete
WHFS Point Data Control GUI for gages to FFMP	OB4	complete
Add on-the-fly basin layering and aggregation at the D2D display level of FFMP to allow users to look downstream flooding effects of heavy rainfall.	OB5	on track
Add 'all basins' display as a toggle in the basin table	OB5	on track
Use MPE as a QPE source	OB6	preliminary work
Add basin trace display to D2D	OB6	preliminary work
Add nearby city functionality	OB6	preliminary work

Accomplishments/Actions - 1st Quarter FY04

Added RFC QPF, 0-3 hour Kitmiller QPF and Satellite Auto-Estimate QPE as input sources.
Completed WHFS Point Data Control GUI for D2D.

Problems Encountered/Issues - 1st Quarter FY04

None

AHPS Short to Long-Term Forecasts

Streamflow Regulation Accounting - CR11

Team Lead Larry Black, MBRFC
Janice Sylvestre, OHD/HSMB

Objective To continue the development of a strategy for AHPS implementation for river basins where the regulation of streamflow is substantial. This strategy will enable MBRFC and other RFCs to effectively account for the effects of this regulation in their conditional simulations in ESP and thereby provide consistent, accurate, science-infused long-range probabilistic forecasts.

Milestones

Task	Due Date	Status
Prepare task schedule	Dec 2003	done
Prepare regulation Issues Identification Document	Jan 2004	on schedule
Summarize findings and submit report	Mar 2004	
Develop modeling strategic plan	May 2004	
S. Platte data collection & inventory	Jun 2004	

Accomplishments/Actions - 1st Quarter FY04

The task was assigned on Dec 15th, and the kickoff meeting was held Dec. 16th after which the task schedule was defined and approved. Work began on developing a “Streamflow Regulation Issues and Solutions” document which will be sent to the RFCs for input.

Problems Encountered/Issues - 1st Quarter FY04

None

Ensemble System Enhancements - OHD2

Team Lead Jon Roe, OHD/HL/HSEB & Janice Sylvestre, OHD/HL/HSMB

Tech Lead Julie Demargne, OHD/HL/HSMB

Objective Develop an operational and enhanced Ensemble Pre-Processor to generate precipitation and temperature ensemble forecasts from short to long term. The Ensemble Pre-Processor will be based on new science for short and medium range consistent with the long-term existing process. Three journal articles relative to the short-term ensemble pre-processor will provide a strong theoretical scientific basis to the prototypes. Test sites are relative to MARFC, ABRFC, and CNRFC.

Milestones

Task	Due Date	Status
1.) Development of enhanced short-term pre-processor for Linux (including calibration files)	December 2004	Complete
2.) Development of a unique short and long range pre-processor	March 2004	In progress
3.) Enhancements of the short and medium range processes to separate temperature processes from precipitation and modify them (including new calibration files)	July 2004	
4.) Development of enhanced short term ensemble pre-processor to use CPC precipitation forecasts for days 2-5 (including new calibration files)	February 2005	
5.) Evaluation and verification of days 1-5 precipitation and temperature ensembles	March 2005	
6.) Enhancements of the medium range processes to use CPC days 6-14 precipitation and temperature forecasts	June 2005	
7.) Development of a calibration prototype for short to long range calibration	June 2005	
8.) Development of a research prototype to verify days 1-14 precipitation and temperature ensembles	June 2005	

Accomplishments/Actions - 1st Quarter FY04

- Development of a detailed project plan and a description of all the OHD ensemble activities.
- Enhanced short-term pre-processor delivered to the 3 RFCs.

- Coordination with RTi for the development of the second prototype and initial testing.
- Development of a first draft for one journal article.

Problems Encountered/Issues - 1st Quarter FY04

None

Probabilistic Verification - OHD4

Team Lead Jon Roe, OHD/HL/HSEB
Tech Lead Edwin Welles, OHD/HL/HSEB
(with Dr. Soroosh Sorooshian, University of California)

Objective Continue research and software development aimed at providing a graphical system for verifying probabilistic hydrologic forecasts.

Milestones

Task	Due Date	Status
1.) Continue research into methods for verifying NWS probabilistic hydrologic forecasts	May 2004	Ongoing
2.) Validate graphical product presentation with users (similar to CLIMAS study)	September 2004	
3.) Present research results to RFC/HSD/OHD staff	September 2004	Interim presentations to OHD have occurred.
4.) Continue software development for probabilistic forecast verification based on research completed in FY2002	August 2004	Ongoing

Accomplishments/Actions - 1st Quarter FY04

As a hold over from FY2003, the software development for the prototype probabilistic verification application continues at the Riverside Technologies, Inc. (RTi) offices in Colorado. The design of the software took longer than expected, being completed in October 2003, rather than the summer of 2003. When the design and the development are successful, we will provide a very flexible structure into which additional verification procedures can be integrated. The delivery for the software is expected in February; then testing at OHD and the CBRFC will begin.

We are currently developing the Statement of Objectives (SOO) to continue this task in FY2004 under the new AHPS contract with RTi. The focus of this task is to define the run-time Verification and Validation procedure to be used by the RFC forecasters for quality controlling probabilistic products.

Problems Encountered/Issues - 1st Quarter FY04

None

Calibration System Enhancements - OHD10

Team Lead Mike Smith, OHD/HSMB

Objective Update the hydrologic model Calibration System (CS) to increase efficiency of the calibration process. Support RFC calibration contract work by Eric Anderson

Milestones

Task	Due Date	Status
Develop functional system design	12/2003	completed
Assemble field requirements	12/2003	some already acquired, need updated versions
Evaluate current components against functional design, field requirements	2/2004	
Develop E2E project plan		

Accomplishments/Actions - 1st Quarter FY04

Work on ICP was begun by tasking the AHPS contractor with developing functional requirements of ICP in preparation for software engineering. Planned trip for Eric Anderson to assist APRFC with calibration issues.

Problems Encountered/Issues - 1st Quarter FY04

None

Historical Data Preprocessor - OHD28

Team Lead Pedro Restrepo, OHD/HL
John Schaake

Objectives Reduce cost of data preparation for model calibration and ESP by reducing time required to process historical data, Increase the reliability of calibration data sets, Estimate the accuracy of MAP data sets, Integrate with calibration software.

Milestones

Task	Due Date	Status
1. Provide prototype historical data processing procedure for NWSRFS and test in 1 RFC	Sept 2004	
2. Modify prototype procedures based on RFC feedback, test in additional RFC and arrange for operational implementation	Sept 2005	

Accomplishments/Actions - 1st Quarter FY04

Updated historical daily and hourly precipitation data base.

Problems Encountered/Issues - 1st Quarter FY04

None

System Enhancements for Science Infusion - OHD33

Team Lead Joe Roe, OHD/JL/HSEB
Tech Lead Anthony Varone, Varone Consulting, Inc.

Objectives The objective of this project is to provide the RFC and WFO field offices and our university collaborators with greater access to our software and with greater support for their own development, leading to faster turnaround of system enhancements. The end result will be web served source code, libraries, make files, and test procedures as well web served check-in procedures for all of the above.

Milestones:

Task	Due Date	Status
1.) Develop initial functional requirements for new generation OHD Configuration Management (CM) system	December 2003	Complete
2.) Define improved OHD software development processes and procedures to facilitate collaborative development	April 2004	On schedule
3.) Refine CM system functional requirements	June 2004	Not started yet
4.) Select new CM tool environment	June 2004	Not started yet
5.) Purchase new CM tools	July 2004	Not started yet
6.) Integrate new CM tools and software processes fully into OHD development & maintenance	December 2004	Piloting some new processes

Accomplishments/Actions - 1st Quarter FY04

1.) During this period the OHD Science Infusion & Software Engineering Process Group (SI_SEPG) met several times to collect, discuss, and document CM system requirements based on input from AWIPS developers, NEXRAD developers, HADS developers, and science prototypers. Started the process of evaluating commercial CM tools. Worked through the NWS Office of the Chief Information Officer to access NWS's account with the Gartner Group, the world's foremost evaluator of software development tools and products. Requested the Gartner Group evaluate our functional requirements and brief us in January 2004.

2.) OHD managers met several times during the quarter to define the overall Hydrologic Operations and Service Improvement Process (HOSIP). The HOSIP is a tailoring of the emerging NWS Operations and Service Improvement Process (OSIP) specifically for OHD use. The HOSIP covers the totality of process, procedures, documentation, review, and approval for

the movement of science and engineering ideas into NWS operations. Within the HOSIP are the software development and CM processes important here.

3.) Depends on completion of 2 above.

4.) Depends on completion of 3 above.

5.) Depends on completion of 4 above.

6.) Improved software development processes and procedures (e.g., derivation of requirements using use cases, development of Concept of Operations documents) are being piloted now on selected tasks.

Problems Encountered/Issues - 1st Quarter FY04

Completion of this proposal's work is heavily dependent on the related larger work of developing and integrating the HOSIP.

NDFD to NWSRFS Preprocessor - OHD36

Team Lead Jon Roe, OHD/HL/HSEB
Tech Lead Edwin Welles, OHD/HL/HSEB

Objective Build a preprocessor based on the pre-existing requirements document that will ingest NWS National Digital Forecast Database (NDFD) precipitation and temperature grids, compute areal averages for river basins, find element values at points, and output time series of areal averages and point values in formats compatible with NWSRFS and external user applications.

Milestones

Task	Due Date	Status
1.) Obtain validated test data sets from the AWIPS Program	April 2004	
2.) Analyze requirements document, create development plan	Start + 0.5 month	
3.) Design preprocessor	Above + 0.5 month	
4.) Code and unit test preprocessor	Above + 0.5 month	
5.) Develop integration test procedures and data sets	Above + 0.5 month	
6.) Perform integration testing (end-to-end)	Above + 1.0 month	
7.) Develop user and system documentation	Above + 0.5 month	
8.) Field test preprocessor at two RFCs	Above + 1.0 month	
9.) Integrate into AWIPS release and support AWIPS testing	Above + 2.0 months	

Accomplishments/Actions - 1st Quarter FY04

The development path for the NWSRFS ingest of NDFD grid data is currently being planned. One requirement of cross office development for AWIPS baseline deliveries is validated test data. Coordination with the AWIPS Program to provide validated test data will begin shortly and once the AWIPS Program schedule is known, the development schedule for the NDFD ingest can be defined.

Problems Encountered/Issues - 1st Quarter FY04

None

Numerical Model (MRF) Forecast Ensembles - WR2

(Incorporate Precip., Temp. and Climate Forecasts into ESP for Days 1-14 and 14-365)

Team Lead David Brandon, HIC CBRFC
Technical Support Ed Clark, Hydrologist (SCEP), CBRFC
Kevin Werner, Hydrologist - WR-SSD
Operational Imp Jeff Smith, Senior Hydrologist, CBRFC
Web Support Cass Goodman, CSA, CBRFC
Science/Develop Martyn Clark, Geography, CIRES
Science/Develop Subhrendu Gangopadhyay, Civil Engineer, CIRES
Technical Support Jeff Whitacker, Physical Scientist, CDC

Objective (1) Develop, test and implement a procedure to incorporate ensemble forecasts of precipitation and temperature from a meteorological numerical model (MRF-Medium Range Forecast) into ESP for days 1 through 14.
(2) Develop, test, and implement procedures to incorporate climate forecasts into ESP.
(3) Develop, test and implement a procedure to incorporate ensemble forecasts of precipitation and temperature from the meso-eta model into ESP for days 1-3 and connect them to the MRF for days 4 - 14.

Milestones

Task	Due Date	Status
1. Calibrate and evaluate ensembles of PP and TA from the reforecasts of the meso-eta. Connect these to the MRF ensembles which were developed earlier in the project to produce a seamless suite of inputs to ESP. Experiment with different downscaling techniques and procedures.	End of FY04	
2. Integrate climate forecasts as part of the seamless suite of ensembles produced from the first step. To the extent possible, produce and evaluate ESP reforecasts with this methodology. Expand WEB page displays of probabilistic forecasts. Continue to refine/development software to view and analyze time series data and flow forecasts. Develop a prototype to utilize reforecast ensembles, including some probabilistic verification. Work with RTI to assist in testing and evaluating changes to the ESPVS software.	End of FY04	
3. None at this time....put on hold due to less funds than expected.	End of FY05	

Accomplishments/Actions - 1st Quarter FY04

The major accomplishment was to finally access the effect of using MRF ensembles. We have found for snowmelt basins, that even out in week three from the time of the forecast improvements in the mean daily streamflow can be -20-30% improvement over climatology. In weeks 1 and 2 the improvements can be as high as 60%. Note that we did not compare this to the forecast flows that come out of the operational NWSRFS model where deterministic 10-14 day MOS temperatures are used.

- (1) Made a presentation to the National HIC meeting on the project, Oct 28, 2003
- (2) Developed a 70+ PowerPoint slide show on probabilistic model verification used in the MRF project for verification
- (3) Co-authored a paper titled:
“A Verification of Probabilistic River Forecast Incorporating Probabilistic Meteorological Forecast Information”, { will be submitted to the Journal of Hydrometeorology }
- (4) Co Authored a paper:
“An Analysis of Weighting Schemes Using Climate Indices for Seasonal Volume Forecasts Produced From The Ensemble Streamflow Prediction System”
{submitted to the Journal of Hydrometeorology, Jan 8, 2004 }
- (5) Received code from CIRES supporting the operational implementation of the MRFs for the upcoming spring.
- (6) Coordination meeting with CIRES cooperators to discuss the next step in adding ensembles of the meso-eta to the MRF ensembles

Problems Encountered/Issues - 1st Quarter FY04

- Objective (1) has been put on hold due to less funds than expected.
- The biggest problem is that the CBRFC lost the key technical focal point, Kevin Werner. He transferred over to the WRH SSD. He will continue to help out, but in a more limited fashion. A new employee, Ed Clark will slowly assume some of the technical aspects, but there is a steep learning curve.
- The meso-eta reforecast project is complete, but the access of the data is a problem. CIRES and we are coordination with some of the people at NCEP so that we will be able to extract critical parts of the data sets so that the next part of the ensemble project can proceed.

AHPS Flood Forecast Mapping

GIS Based Information Dissemination System - CR3

Team Lead Wendy Pearson, CRH (Dr. Shripad Deo, CIRA, Brain Connelly, NCRFC and Eugene Derner, MBRFC)

Objective Develop a GIS-based display system to present a variety of hydrologic information to meet the needs of local, regional, and national users

Milestones

Task	Due Date	Status
Provide training for GIS system	Sep 2003	Complete
Hardware and software procured and installed	Sep 2003	Complete
Contract support allocated for IMS development work	Sep 2003	Complete
Develop GIS-based information dissemination system	Sep 2004	Ongoing

Accomplishments/Actions - 1st Quarter FY04

Software development licenses installed at CRH and MBRFC in October 2003.

Data identified for an AHPS ArcIMS service. Plans for MySQL database to feed this ArcIMS service were outlined.

\$2300 of the \$20K was spent to support contract with Shafer, Kline and Warren, Inc. for IMS development work for the months of October, November, and December 2003.

Problems Encountered/Issues - 1st Quarter FY04

None

Flood Forecast Mapping - OHD5

Team Lead Janice Sylvestre, OHD/HSMB

Objective Further testing of the flood forecast mapping application (FLDVIEW) to address the issues of accuracy and data requirements. Test more complex capabilities in FLDVIEW and identify limitations of the various data used

Milestones

Task	Due Date	Status
Test FDLVIEW at new area	Sept 2004	on schedule
Test FLDIMS template in another Susquehanna River area	Sept 2004	on schedule
Investigate alternate methods to generate water surface profiles	Sept 2004	on schedule

Accomplishments/Actions - 1st Quarter FY04

A preliminary flood map was generated for the St. Johns River, FL; GIS data was acquired in preparation for a flood map in Harrisburg, PA; flood animation capability is being added to FLDIMS; the West Branch of the Susquehanna River template for FLDIMS is being populated; the SHRT model was developed and is undergoing testing.

Problems Encountered/Issues - 1st Quarter FY04

None

River Mechanics Modeling - OHD15

Team Lead Janice Sylvestre, OHD/HSMB

Objective Enhance FLDWAV to account for hydraulic situations not currently addressed by the model.

Milestones

Task	Due Date	Status
Account for ice effects	Sep 2004	on schedule
Improve the use of dynamic routing and ESP	Sep 2004	on schedule
Update operational FLDWAV with stand-alone capabilities	Ongoing	ongoing

Accomplishments/Actions - 1st Quarter FY04

Testing of all of the changes to FLDWAV over the last two years is underway. FLDAT and FLDVIEW capabilities in FLDWAV, were placed in the AWIPS version of FLDWAV.

Problems Encountered/Issues - 1st Quarter FY04

None

River Mechanics Utilities - OHD16

Team Lead Janice Sylverstre, OHD/HSMB

Objective Provide a visual tool (FLDAT) to help the users understand the complexities of dynamic routing and to assist in the development of new methodologies being added to FLDWAV

Milestones

Task	Due Date	Status
Add calibration capabilities	September 2004	on schedule
Increase editing capabilities	December 2004	done
Continue debugging applications	ongoing	ongoing

Accomplishments/Actions - 1st Quarter FY04

Better editing capabilities (copy/cut/paste) were added to FLDAT. The stand-alone version is currently being beta tested (a few RFCs are providing feedback).

Problems Encountered/Issues - 1st Quarter FY04

None

Inundation Mapping Implementation - OHD31

Team Lead: Jon Roe, OHD/HL/HSEB

Tech Lead: Joseph Gofus, OHD/HL/HSEB

Objectives: Provide operational software to RFCs for computing inundation maps.

Milestones:

Task	Due Date	Status
1.) Update the FLDWAV model in NWSRFS to provide data needed for inundation mapping.	March 2004	In Progress
2.) Update NWSRFS tests to provide stable baseline tests for the updated FLDWAV model.	March 2004	In Progress
3.) Develop a process for routinely migrating functionality from the FDLWAV Prototype to the NWSRFS baseline.	April 2004	
4.) Review the design of the data interface between FLDWAV and FLDVIEW to enhance efficiency and use of accepted standards.	September 2004	

Accomplishments/Actions - 1st Quarter FY04

- Completed a detailed project plan and description of activities for FY04.
- Began the process of merging FLDWAV Prototype source code into the AWIPS NWSRFS baseline and testing the resulting programs.
- RTi delivered the first piece of a new set of FLDWAV regression tests.

Problems Encountered/Issues - 1st Quarter FY04

None.